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THE CONTRIBUTIONS OF PARACELSUS TO MEDICAL SCIENCE AND PRACTICE.

THERE appears to be little doubt as to the real value of many specific contributions of Paracelsus to medical knowledge and practice, although competent authorities differ widely as to the extent and character of his influence upon medical progress. It may be admitted that his vigorous assaults upon the degenerate Galenism of his day were effective in arousing an attitude of criticism and questioning which assisted greatly the influence of other workers whose labors were laying less sensationally but more soundly the foundation stones of scientific medicine.

Vesalius, often called the founder of the modern science of anatomy, and Paré, the "father of surgery," were both contemporaries of Paracelsus, though their great works appeared only after the death of Paracelsus. The "Greater Surgery" of Paracelsus had appeared nearly thirty years before Paré's classical work and had passed through several editions, and it is said that Paré acknowledged his indebtedness to Paracelsus in the preface to the first edition of his work.¹

Admitting that none of the medical treatises of Paracelsus has the scientific value of the works of his great contemporaries, it should nevertheless not be forgotten

¹ Cf. Stoddart, *The Life of Paracelsus*. London, 1911, p. 65.

that his work may have had an influence for progress in his own time much greater than its present value in the light of later knowledge. Dr. Sudhoff records some nineteen editions of the "Greater Surgery" by the close of the sixteenth century, in German, French, Latin and Dutch languages, and other works of his shared in somewhat less degree in this popularity.

The disapproval and hostility of the universities and the profession toward Paracelsus should not be permitted to mislead us into underrating his influence, as it may be recalled that both Vesalius and Paré also suffered from this hostility. Vesalius was denounced by his former teacher Sylvius as an insane heretic and his great work on anatomy was denounced to the Inquisition. Though he was not condemned by that body his professorship at Padua became untenable, and he was forced to return to his native city Brussels and is said to have become a hypochondriac as the result of his persecutions.

Paré was more successful in maintaining his professional position through official support though the faculty of the University of Paris protested his tenure of office.

The history of medical science and discovery has been the subject of more thorough study than most of the natural sciences, and a number of competent critics of early medical history have estimated the place of Paracelsus in the development of various departments of that science. From such sources may be best summarized the contributions of Paracelsus.

Thus with respect to surgery, Dr. Edmund Owen in the *Encyclopaedia Britannica* (eleventh edition, article "Surgery") says:

"The fourteenth and fifteenth centuries are almost entirely without interest for surgical history. The dead level of tradition is broken first by two men of originality and genius, Paracelsus (1493-1541) and Paré, and by the re-

vival of anatomy at the hands of Andreas Vesalius (1514-64) and Gabriel Fallopius (1523-1562), professors at Padua. Apart from the mystical form in which much of his teaching was cast Paracelsus has great merits as a reformer of surgical practice. It is not, however, as an innovator in operative surgery, but rather as a direct observer of natural processes that Paracelsus is distinguished. His description of hospital gangrene, for example, is perfectly true to nature; his numerous observations on syphilis are also sound and sensible; and he was the first to point out the connection between cretinism of the offspring and goitre of the parents."

So also Proksch,² the historian of syphilitic diseases, credits Paracelsus with the recognition of the inherited character of this disease and states that there are indeed but few and subordinate regulations in modern syphilis-therapy which Paracelsus has not enunciated. Iwan Bloch also attributes the first observation of the hereditary character of that disease to Paracelsus.³ That Paracelsus devoted so much attention to the consideration of these diseases was evidently made a subject of contemptuous criticism by his opponents as may be inferred from his replies to them in the *Paragranum*.⁴

"Why then do you clowns (*Gugelfritzen*) abuse my writings, which you can in no way refute other than by saying that I know nothing to write about but of *luxus* and *venere*? Is that a trifling thing? or in your opinion to be despised? Because I have understood that all open wounds may be converted into the French disease (i. e., syphilis), which is the worst disease in the whole world,—no worse has ever been known,—which spares nobody and attacks the highest personages the most severely—shall I

² Quoted by Baas, *Geschichtliche Entwicklung des ärztlichen Standes*, p. 210.

³ Neuburger und Pagel. *Handbuch der Geschichte der Medizin*, III, 403.

⁴ Paracelsus, *Opera*, Strassburg Folio, 1616. I, 201-2.

therefore be despised? Because I bring help to princes, lords and peasants and relate the errors that I have found, and because this has resulted in good and high reputation for me, you would throw me down into the mire and not spare the sick. For it is they and not I whom you would cast into the gutter."

Dr. Bauer⁵ calls attention to the rational protest of Paracelsus against the excessive blood-letting in vogue at the time, his objections being based on the hypothesis that the process disturbed the harmony of the system, and upon the argument that the blood could not be purified by merely lessening its quantity.

"For the healing art and for pharmacology in connection therewith," says Dr. E. Schaer in his monograph on the history of pharmacology,⁶ reform is in the first instance attached to the name of Theophrastus Paracelsus whose much contested importance for the rebirth of medicine in the period of the Reformation has been in recent times finally established in a favorable direction by a master work of critical investigation of sources. . . . But however much overzealous adherents of the brilliant physician may have misunderstood him and have gone at times beyond the goal he established, nevertheless the historical consideration of pharmacology will not hesitate to yield to Paracelsus the merit of the effective repression of the medieval polypharmacy often as meaningless as it was superstitious and to credit him with having effectively called attention to the pharmacological value of many metallic preparations and analogous chemical remedies."

Dr. Max Neuburger⁷ thus summarizes the claims of Paracelsus to a place in the history of the useful advances in medicine:

⁵ *Geschichte der Aderlässe*, 1870, p. 147.

⁶ Neuburger and Pagel, II, 565-6.

⁷ Neuburger and Pagel, II, 36ff.

"Under the banner of utilitarianism Paracelsus rendered the practical art of healing so many services that in this respect his preeminent historical importance cannot be doubted. In bringing chemistry to a higher plane and in making the new accessory branch useful to medicine, in comprehending the value of dietetics, in teaching the use of a great number of mineral substances (iron, lead, copper, antimony, mercury), and on the other hand in teaching the knowledge of their injurious actions; in paving the way to the scientific investigation of mineral waters (determination of the iron contents by nut galls), in essentially improving pharmacy (with his disciples Oswald Croll and Valerius Cordus) by the preparation of tinctures and alcoholic extracts. . . . he has achieved really fundamental merit for all time."

It was also no unimportant service that Paracelsus rendered to medical science in attributing to natural rather than to the mystical influence of devils or spirits such nervous maladies as St. Vitus' dance. It is doubtful perhaps if his influence in this direction was very immediate upon contemporary thought, at least if we may judge from the sad history of the trials, tortures and executions of witches during a century after the activity of Paracelsus.

Doubtless also the fantastic character of the philosophy of Paracelsus itself served to diminish the effect of his sounder and saner thought.

A distinguished student of the history of science, Andrew D. White, thus characterizes the services of Paracelsus in this direction.⁸

"Yet in the beginning of the sixteenth century cases of 'possession' on a large scale began to be brought within the scope of medical science, and the man who led in this evolution of medical science was Paracelsus. He it was who first bade modern Europe think for a moment upon the

⁸ *History of Warfare of Science and Theology*, II, 139.

idea that these diseases are inflicted neither by saints nor demons, and that the 'dancing possession' is simply a form of disease of which the cure may be effected by proper remedies and regimen. Paracelsus appears to have escaped any serious interference; it took some time, perhaps, for the theological leaders to understand that he had 'let a new idea loose upon the planet,' but they soon understood it and their course was simple. For about fifty years the new idea was well kept under, but in 1563 another physician, John Wier of Cleves, revived it at much risk to his position and reputation."

An interesting thesis maintained by Paracelsus was the doctrine that every disease must have its remedy. The scholastic authorities had pronounced certain diseases as incurable, and they were accordingly so considered by the profession. Rejecting as he did the ancient authorities, Paracelsus naturally enough rejected this dogma as necessarily true. Manifestly also he believed that he himself had with his new remedies effected cures of certain of these diseases, though he makes no pretension to be able to cure all diseases. The history of medical thought and discussion shows that this thesis of Paracelsus was a frequent subject of partizan debate during the century after Paracelsus.

Paracelsus sustains his thesis, however, not by the method of modern science—upon evidence of experiment and observation—but by the philosophical or rather metaphysical argument of its *a priori* reasonableness in the divine purpose, and by his interpretation of the doctrines of Christ.

"Know therefore that medicine is so to be trusted in relation to health—that it is possible for it to heal every natural disease, for whenever God has entertained anger and not mercy, there is always provided for every disease a medicine for its cure. For God does not desire us to die

but to live, and to live long, that in this life we may bear sorrow and remorse for our sins so that we may repent of them."⁹

"There is yet another great error which has strongly influenced me to write this book,—namely, because they say that diseases which I include in this book are incurable. Behold, now, their great folly: How can a physician say that a disease is incurable when death is not present; those only are incurable in which death is present. Thus they assert of gout, of epilepsy. O you foolish heads, who has authorized you to speak, because you know nothing and can accomplish nothing? Why do you not consider the saying of Christ, where he says that the sick have need of a physician? Are those not sick whom you abandon? I think so. If then they are sick as proven, then they need the physician. If then they need the physician, why do you say they cannot be helped? They need the physician that they may be helped by him. Why then do you say that they are not to be helped? You say it because you are born from the labyrinth [of errors] of medicine, and Ignorance is your mother. Every disease has its medicine. For, it is God's will that he be manifested in marvelous ways to the sick."¹⁰

This is obviously setting dogma against dogma, and opposing to scholasticism the methods of scholasticism. Yet that this dictum of Paracelsus was not without influence upon contemporary thought is evidenced by a passage in the writings of Robert Boyle in the century following.¹¹

"Though we cannot but disapprove the vainglorious boasts of Paracelsus himself and some of his followers, who for all that lived no longer than other men, yet I think

⁹ Paracelsus, *Liber de religione perpetua*. Sudhoff, *Versuch einer Kritik*, etc., II, 415.

¹⁰ Par., *Op.* I, 253. "Die erste Defension."

¹¹ Boyle's Works, Birch's ed., I, 481.

mankind owes something to the chymists for having put some men in hope of doing greater cures than have been formerly aspired to or even thought possible and thereby engage them to make trials and attempts in order thereto. For not only before men were awakened and excited by the many promises and some great cures of Arnaldus de Villanova, Paracelsus, Rulandus, Severinus, and Helmont, many physicians were wont to be too forward to pronounce men troubled with such and such diseases as incurable and rather detract from nature and art than confess that these two could do what ordinary physick could not, but even now, I fear, there are but too many who though they will not openly affirm that such and such diseases are absolutely incurable, yet if a particular patient troubled with them is presented, they will be very apt to undervalue (at least) if not deride those who shall attempt to cure them."

His rational consideration and treatment of wounds and open sores is worthy of note. Instead of the customary treatment of closing up by sewing or plastering, or covering them with poultices and applications, he advocated cleanliness, protection from dirt and "external enemies." and regulation of diet, trusting to nature to effect the cure. "Every wound heals itself if it is only kept clean."¹²

There is no doubt that Paracelsus enjoyed a considerable reputation as a skilful and successful practitioner, and there is contemporary testimony, as well as his own statements, to show that he was frequently sent for even from long distances to treat wealthy and prominent patients whose maladies had baffled the skill of the Galenic physicians.

It is of course true that popular reputations of physicians are not always the true measure of ability even in our day. Nevertheless there seems little reason to doubt in spite of the assertions of hostile critics of his time, that

¹² Cf. Helfreich in Neuburger and Pagel, III, p. 15.

with his new remedies, his keen observation, and his unusually open mind, he was indeed able to afford relief or to effect cures where the orthodox physicians trammelled by their infallible dogmas were unsuccessful. That his new methods sometimes did harm rather than good is quite possible. That would naturally be the result of breaking radically new paths. And an independent empiricism—a practice founded upon experiment and personal observation seems to have been his practice and his teaching, "*Experientia ist Scientia.*" It seems probable that in his dealings with the sick, his fantastic natural philosophy was rather subordinatèd to a native common sense and practical logic. As stated by Professor Neuburger (*op. cit.*, II, 35), "We see in Paracelsus . . . the most prominent incorporation of that enigmatic, intuitive, anticipative intelligence of the people, which drawing upon the unfathomable sources of a rather intuitive than consciously recognized experience, not infrequently puts to shame the dialectically involved reasoning of scholasticism."

Paracelsus has indeed clearly expressed his opinion that theories should not be permitted to dominate the practice of the physician.

"For in experiments neither theories nor other arguments are applicable, but they are to be considered as their own expressions. Therefore we admonish every one who reads these, not to oppose the methods of experiment but according as its own power permits to follow it out without prejudice. For every experiment is like a weapon which must be used according to its peculiar power, as a spear to thrust, a club to strike,—so also is it with experiments. . . . To use experiments requires an experienced man who is sure of his thrust and stroke that he may use and direct it according to its fashion."¹³

That he endeavored to keep an open mind toward the

¹³ *Chir. Bücher*, Fol. 1618, pp. 300-301.

symptoms of his patients, not too much governed by pre-conceived dogmas, is also indicated in his defense against certain attacks of his opponents in which they accuse him of not at once recognizing symptoms and treatment:

"They complain of me that when I come to a patient, I do not know instantly what the matter is with him, but that I need time to find out. It is indeed true that they pronounce judgment immediately; their folly is to blame for that, for in the end their first judgment is false, and from day to day as time passes they know less what the trouble is and hence betake themselves to lying, while I from day to day endeavor to arrive at the truth. For obscure diseases cannot be at once recognized as colors are. With colors we can see what is black, green, blue etc. If however there were a curtain in front of them we could not recognize them. . . . What the eyes can see can be judged quickly, but what is hidden from the eyes—it is vain to grasp as if it were visible. Take, for instance the miner; be he as able, experienced and skilful as may be, when he sees for the first time an ore, he cannot know what it contains, what it will yield, nor how it is to be treated, roasted, fused, ignited or burned. He must first run tests and trials and see whither these lead. . . . Thus it is with obscure and serious diseases, that so hasty judgments cannot be made though the humoral physicians do this."¹⁴

Admitting the value of the positive contributions of Paracelsus to medical knowledge and practice, the net value of the reform campaign which he instituted is variously estimated by historians of medicine. For it must be remembered that Paracelsus fought against dogmas entrenched in tradition, by dogmas of his own. To the fantastic theories of the Greek-Arabian authorities he opposed many equally fantastic theories. That by his assault upon the absurdities and weaknesses of the Galenic medicine of

¹⁴ *Op. fol.*, I, 262. (Die siebente Defension.)

his time he paved the way for greater hospitality to new and progressive ideas is unquestionable, but that by this assault he also did much to discredit the valuable elements as well as the corruptions of ancient medical achievements is also true. It is very difficult to balance justly the progressive and the reactionary influences he exerted upon the progress of medicine, and naturally, therefore, authorities differ upon this question. Thus Neuburger (*op. cit.*) appreciates the value of the accomplishments of Paracelsus, yet doubts that he is to be considered as a reformer of medicine in the sense that was Vesalius or Paré, that is, he laid no foundation stones of importance and the real value of much of his thought required the later developments of modern scientific thought for its interpretation. His aim was to found medicine upon physiological and biological foundation but the method he chose was not the right method, and his analogical reasons and fantastic philosophy of macrocosm and microcosm were not convincing and led nowhere. The disaffection and discontent with conditions in medicine produced by his campaign, can, thinks Neuburger, hardly be called a revolution. That was to come later through the constructive work of more scientific methods.

In a similar vein Haeser (*op. cit.*) remarks "Scarcely ever has a physician seized the problem of his life with purer enthusiasm, served it with truer heart, or with greater earnestness kept in view the honor of his calling than the reformer of Einsiedeln. But the aim of his scientific endeavors was a mistaken one and no less mistaken was the method by which he sought to attain it."

A recent writer, Professor Hugo Magnus,¹⁵ presents a more critical point of view:

"We must then summarize our judgment to this effect, that Paracelsus keenly felt the frightful corruption which

¹⁵ Hugo Magnus, *Paracelsus der Ueberarzt*. Breslau, 1906.

medicine and the investigation of nature suffered from the hands of the Scholastics, but that he did not understand how to penetrate to the causes of this condition of his science. Instead of seeking in the scholastic system the root of this medical degeneration, he believed that it must be found exclusively in the healing art of the ancients. And thus he sought to shatter in blind hatred all that existed, without being in position to be able to replace the old theory he maligned by a new and better concept of nature and medicine. So Paracelsus wore away in unclear struggling, his bodily and mental energy, and lived indeed as a reformer,—a medical superman, in his own imagination, in his own valuation, but not in the recognition of his own times, nor in the judgment of posterity.”

“If therefore I can find no relationship between the general methods of medicine to-day and the Theophrastic concept of nature, nevertheless our supercolleague must be considered in an essentially limited respect, to be sure, as the pioneer in certain modern points of view. He was the first to attempt the consideration of the phenomena of organic life in a chemical sense, and I do not need to emphasize that he thereby paved the way to a very powerful advance in our science. In this respect was Paracelsus a reformer, here he has pointed new paths in the valuation of pathologic phenomena as well as in therapy, even if here also he has theorized enough and allowed his neo-Platonism to play him many a trick.”

By discarding and condemning all the ancient authorities, thinks Magnus, Paracelsus assailed not only the corrupted Galenism of his time but did much to discredit the positive achievements of the Greeks, and although the original Greek authorities were not the then prevailing texts, they were at least accessible in newly translated versions, and the good in them might have been incorporated and built upon by Paracelsus if he had possessed the scientific

point of view. To the extent of his influence in this direction Paracelsus was therefore an opponent rather than a promoter of the progress of medical science. "Through his irrational theories he gave impulse to all sorts of mistaken notions among his followers, so that the wildest vagaries existed among the Paracelsists of the succeeding century."

The above will serve to illustrate the trend of modern critical judgment of Paracelsus as a reformer of medicine.

However estimates may vary as to the extent of the influence of Paracelsus as a reformer of medicine, credit must certainly be given him as a forceful agent in the downfall of the scholastic medical science of his time. The real reform in medical science, its establishment upon a basis of modern scientific method, was not the work of his century nor of the century to follow. Indeed it may not be too much to say that that great reform was mainly the work of the nineteenth century, and was made possible only through the patient labors of many investigators in the domains of physics, chemistry, anatomy, and biology.

If, however, we cannot claim for Paracelsus the unchallenged place of the reformer of medicine, we may at least recognize in him an earnest, powerful, and prophetic voice crying in the wilderness.

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